

2011 Career Path Study: The views of former STFC students on skills development

1. Background

1.1. Former students who responded to the request to complete the career path survey were asked to select from a list of 19 skills and competencies:

- All that they had developed during their PhD
- The five that were most important in their current role
- Any that they felt should have been given greater emphasis during the PhD

1.2. There was also an option to identify any additional skills or competencies that were not in the list but only a handful of items were submitted under this heading. 294 respondent provided information on skills: 24% were female, 48% were working in universities, 29% in the private sector and 23% in the public sector. The students had completed their PhDs between 2004 and 2009.

2. All skills developed during PhD

2.1. Figure 1 shows the proportion of respondents selecting each skill that they developed during the PhD.

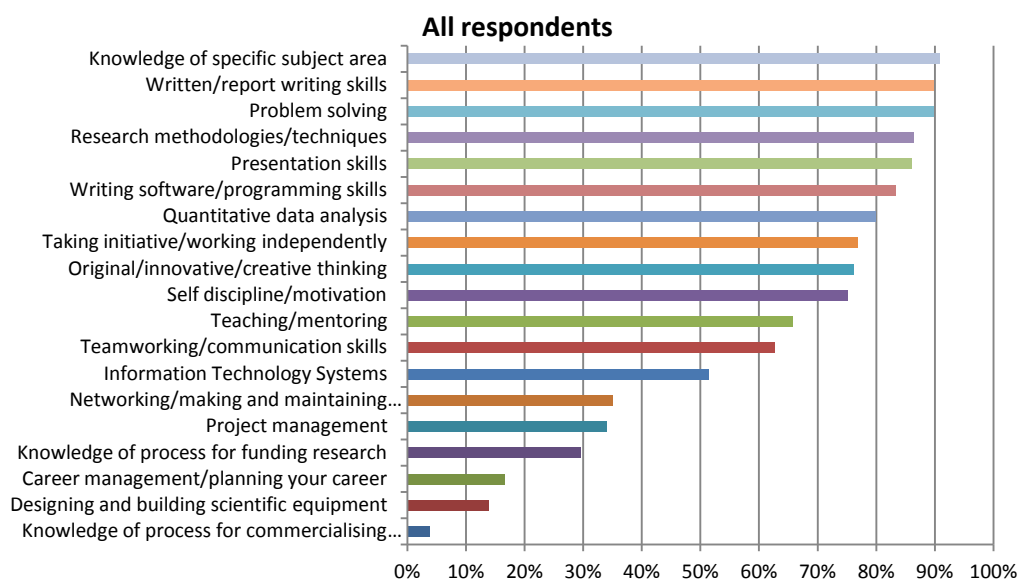


Figure 1 All skills developed during PhD

2.2. The five skills that most former students considered that they developed during their PhD were:

	% selecting
Knowledge of specific subject area	91%
Written/report writing skills	90%
Problem solving	90%
Research methodologies/techniques	86%
Presentation skills	86%

2.3. There were some differences in the skills selected by respondents from different sectors. In particular respondents working in the private sector were less likely to select:

Skill developed in PhD	Private	Public	University
Knowledge of specific subject area	83%	91%	95%
Research methodologies	82%	91%	92%
Taking initiative	77%	91%	73%
Knowledge of process for funding research	18%	35%	38%
Networking/making and maintaining contacts	23%	46%	33%
Career management/planning your career	6%	23%	22%

2.4. There were five skills which were selected by higher proportions of women than men:

- Knowledge of specific subject area (99% vs 88%)
- Research methodologies (94% vs 84%)
- Quantitative data analysis (93% vs 76%)
- Taking initiative (86% vs 74%)
- Project management (44% vs 31%)

3. Five Most Important Skills Used in Current Role

3.1. Figure 2 shows the skills that respondent considered were most important in their current role.

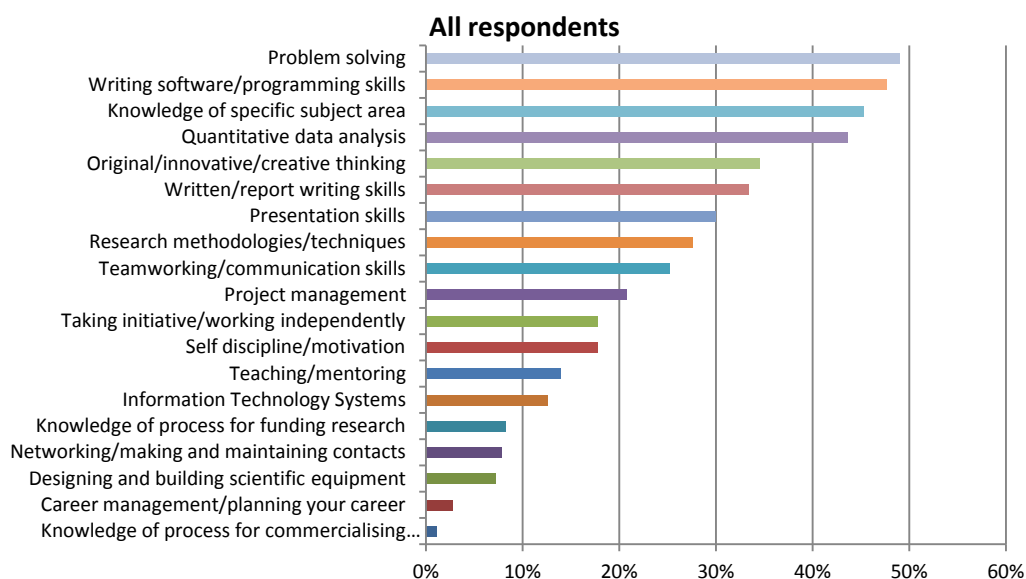


Figure 2 Most important skills to current role gained in the PhD

3.2. The five skills that were selected by the most respondents were:

	% selecting
Writing software/programming skills	47%
Knowledge of specific subject area	44%
Quantitative data analysis	43%
Original/innovative/creative thinking	35%

3.3. There were several differences between the skills selected by respondent employed the three main sectors:

Skill used in current role	Private	Public	University
Knowledge of specific subject area	12%	46%	74%
Problem solving	72%	46%	44%
Presenting	24%	44%	28%
Research methodologies	12%	35%	41%
Teaming working	41%	30%	15%
IT systems	24%	5%	11%
Project management	30%	12%	21%

3.4. There were also some differences between men and women. More men than women selected:

- Writing software/programming skills (53% vs 31%)
- IT systems: (15% vs 4%)

3.5. More women than men selected:

- Project management (30% vs 18%)
- Taking initiative (27% vs 15%)
- Networking (14% vs 5%)

4. Skills that should have been given more emphasis during the PhD

4.1. Figure 3 shows the skills that respondents felt should have been given more emphasis during their PhD.

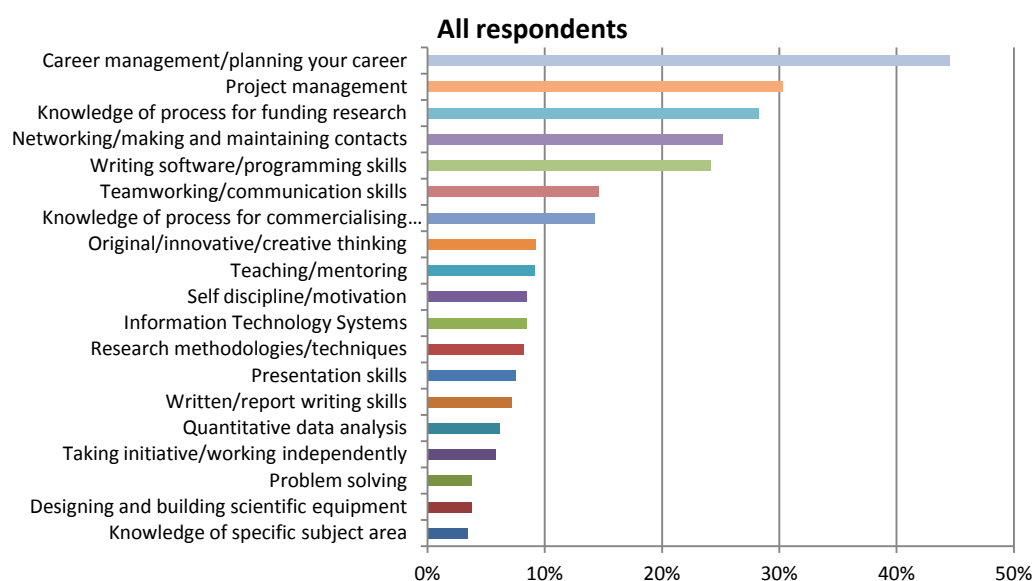


Figure 3 Skills that should have been given more emphasis during the PhD

4.2. There are five skills that stand out:

	% selecting
Project management	31%
Knowledge of process for funding research	28%
Networking/making and maintaining contacts	26%
Writing software/programming skills	24%

4.3. There were some differences in the skills selected by respondents employed in different sectors:

Skill to be given more emphasis	Private	Public	University
Knowledge of process for funding research	18%	25%	36%
Teamworking	22%	19%	8%
Knowledge of process for commercialising research/knowledge transfer	18%	5%	14%

4.4. The only significant difference between men and women was in the proportions selecting “Career management/planning your career”. This was selected by 63% of women and 39% of men.

5. Comparison with Views of Research Intensive Employers

5.1. In 2010 EPSRC commissioned DTZ to investigate the impact of PhDs in research intensive employers in chemicals & life sciences, automotive, electronics & IT and Aerospace and defence. The findings of this study form a useful point of comparison for the views of former students on the usefulness of their skills. Employers were asked to rate the usefulness of various competencies. The responses indicated that research intensive employers rated most highly competencies related to the execution of a research function rather than wider business skills or the technical expertise specific to an individual’s PhD:

Proportion of employers assessing competency as very important			
Generic research related competencies		Technical knowledge and generic	
Problem solving skills	75%	Leadership/leadership potential – research/technology	43%
Research skills/methodologies	63%	Understanding of broader subject of PhD	42%
Communication	59%	Expertise specific to PhD	36%
Data analysis abilities	56%	Ability to network	31%
		Project management	18%
		Business/commercial awareness	14%
		Leadership/leadership potential – business	7%

5.2. In comparison, the five skills selected most often by former STFC PhD students working in the private sector were:

- Problem solving: 72%
- Writing software/programming skills 58%
- Quantitative data analysis 42%
- Team working/communication skills 41%
- Written/report writing skills 35%

5.3. Two main differences are apparent:

- Only 12% of former STFC students selected “Research methodologies/techniques” as one of the five most important in their current role. In the DTZ study, “Research skills and methodologies” was the competency most sensitive to sectoral variation, with the chemicals & life sciences sector rating this more highly.
- Writing software and programming did not feature in the questionnaire used in the DTZ study but this is the second most mentioned skill amongst former STFC students employed in the private sector.

5.4. These differences are likely to stem from the particular sectoral distribution of former STFC students employed in the private sector, with roughly three quarters being employed in business or financial services.

5.5. Employers were also asked about the impact of doctoral holders in improving the capabilities of their organisation. Impacts were classified as:

- Direct: attributable to the skills of the individual
- Indirect: attributable of communication, team working and networking competencies

Proportion of employers assessing as high impact			
Direct impact		Indirect impact	
Technical expertise	83%	Absorptive capacity of organisation	57%
Innovative/creative thinking	75%	Access to knowledge networks outside company	46%
Problem solving and trouble-shooting capabilities	68%	Flows of knowledge within the company	43%
		Promotion of learning culture	42%
		Skills and productivity of other employees	21%